

## Instruction for use

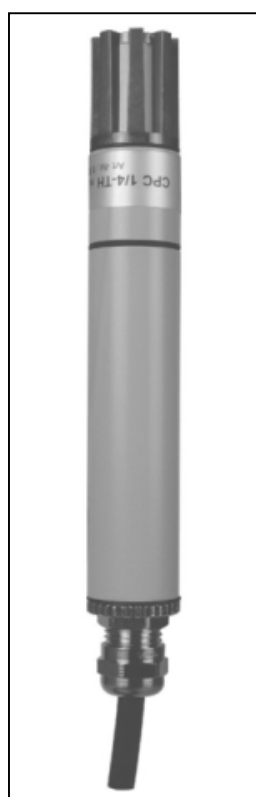
020891/06/13

# Hygro-ThermoTransmitter-compact

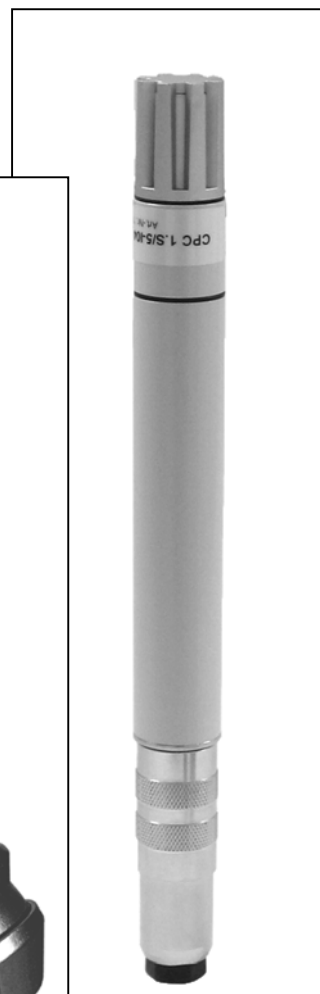
1.1005.54.xxx

1.1005.64.xxx

1.1005x4.0xx/1xx/4xx/8xx...



1.1005.54.2xx/3xx/4xx/9xx...



1.1005.x4.7xx...

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## Safety Instructions

- Before operating with or at the device/product, read through the operating instructions. This manual contains instructions which should be followed on mounting, start-up, and operation. A non-observance might cause:
  - failure of important functions
  - Endangering of persons by electrical or mechanical effect
  - Damage to objects
- Mounting, electrical connection and wiring of the device/product must be carried out only by a qualified technician who is familiar with and observes the engineering regulations, provisions and standards applicable in each case.
- Repairs and maintenance may only be carried out by trained staff or **Adolf Thies GmbH & Co. KG**. Only components and spare parts supplied and/or recommended by **Adolf Thies GmbH & Co. KG** should be used for repairs.
- Electrical devices/products must be mounted and wired only in voltage-free state.
- **Adolf Thies GmbH & Co KG** guarantees proper functioning of the device/products provided that no modifications have been made to the mechanics, electronics or software, and that the following points are observed:
- All information, warnings and instructions for use included in these operating instructions must be taken into account and observed as this is essential to ensure trouble-free operation and a safe condition of the measuring system / device / product.
- The device / product is designed for a specific application as described in these operating instructions.
- The device / product should be operated with the accessories and consumables supplied and/or recommended by **Adolf Thies GmbH & Co KG** .
- Recommendation: As it is possible that each measuring system / device / product under certain conditions, and in rare cases, may also output erroneous measuring values, it is recommended using redundant systems with plausibility checks with **security-relevant applications**.

## Environment

- As a longstanding manufacturer of sensors Adolf Thies GmbH & Co KG is committed to the objectives of environmental protection and is therefore willing to take back all supplied products governed by the provisions of "*ElektroG*" (German Electrical and Electronic Equipment Act) and to perform environmentally compatible disposal and recycling. We are prepared to take back all Thies products concerned free of charge if returned to Thies by our customers carriage-paid.
- Make sure you retain packaging for storage or transport of products. Should packaging however no longer be required, arrange for recycling as the packaging materials are designed to be recycled.



## Documentation

- © Copyright **Adolf Thies GmbH & Co KG**, Göttingen / Germany
- Although this operating instruction has been drawn up with due care, **Adolf Thies GmbH & Co KG** can accept no liability whatsoever for any technical and typographical errors or omissions in this document that might remain.
- We can accept no liability whatsoever for any losses arising from the information contained in this document.
- Subject to modification in terms of content.
- The device / product should not be passed on without the/these operating instructions.

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# 1 Models available

Order-No.	Measuring Range	Humidity Output	Temperature Output	Operating Voltage	Sensor protective filter	Construction / Connection
1.1005.54.000	0...100% r. F. <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE20	Cable gland (Ms), 5m cable
1.1005.54.150	0...100% r. F. <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE20	Cable gland (Ms), 25 m cable
1.1005.54.160	0...100 % r. F. -30...+70°C	0...1 V	0...1 V	6...30 VDC	ZE20	Cable gland (Ms), 10m cable
1.1005.54.161	0...100 % r. F. -30...+70°C	0...10 V	0...10 V	15...30V DC	ZE20	Cable gland (Ms), 5m cable
1.1005.54.173	0...100 % r. F. -30...+70°C	0...5 V	0...5 V	10...30V DC	ZE20	Cable gland (Ms), 5m cable
1.1005.54.241	0...100 % r. F. -30...+70°C	4...20mA	4...20 mA	12..30V DC*	ZE20	Connecting head (Al), Screw clamp Cable gland <sup>1)</sup> , 5m cable
1.1005.54.300	0...100% r. F. <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE21	Connecting head (Al), screw clamp, Cable gland <sup>2)</sup> from stainless steel, 5m cable
1.1005.54.441	0...100 % r. F. -40...+60°C	4...20mA	4...20 mA	12..30V DC*	ZE20	Connecting head (Al), screw clamp, Cable gland <sup>1)</sup> , 5m cable
1.1005.54.448	0...100 % r. F. -40...+60°C	4...20mA	4...20 mA	12..30V DC*	ZE20	Connecting head (Al), screw clamp, Cable gland <sup>1)</sup> , 8m cable
1.1005.54.460	0...100 % r.F. -40...+60°C	0...1 V	0...1 V	6...30 V DC	ZE20	Cable gland (Ms), 5m cable
1.1005.54.461	0...100 % r. F. -40...+60°C	0...10 V	0...10 V	15...30V DC	ZE20	Cable gland (Ms), 5m cable
1.1005.54.700	0...100% r. F. <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE20	Plug
1.1005.54.701	0...100% r. F. <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE20	Plug with mating plug
1.1005.54.760	0...100 % r. F. -30...+70°C	0...1 V	0...1 V	6...30 VDC	ZE20	Plug with mating plug
1.1005.54.761	0...100 % r. F. -30...+70°C	0...10 V	0...10 V	15...30V DC	ZE20	
1.1005.54.762	0...100 % r. F. -40...+60°C	0...10 V	0...10 V	15...30V DC	ZE20	Plug with mating plug
1.1005.54.773	0...100 % r. F. -30...+70°C	0...5 V	0...5 V	10...30V DC	ZE20	Plug with mating plug
1.1005.54.800	0...100% r. F. <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE20	Cable gland (Ms), 10m cable

1.1005.54.941	0...100 % r. F. -5...+50°C	4...20mA	4...20 mA	12..30V DC*	ZE20	Connecting head (Al), Screw clamp Cable gland <sup>1)</sup> , 5m cable
1.1005.64.000	0...100% r. F <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE21	Cable gland (Ms) 5m cable
1.1005.64.161	0...100 % r. F. -30...+70°C	0...10 V	0...10 V	15...30V DC	ZE21	Cable gland (Ms), 5m cable
1.1005.64.173	0...100 % r. F. -30...+70°C	0...5 V	0...5 V	10...30V DC	ZE21	Cable gland (Ms), 5m cable
1.1005.64.241	0...100 % r. F. -30...+70°C	4...20mA	4...20 mA	12..30V DC*	ZE21	Connecting head (Al), Screw clamp Cable gland <sup>1)</sup> , 5m cable
1.1005.64.701	0...100% r. F <-30...>+70°C	0...1 V	Pt 100	6...30V DC	ZE21	Plug with mating plug

\* see diagram RL

<sup>1)</sup> M16x1,5, Material: brass nickel-plated, clamping range: Ø3-7mm

<sup>2)</sup> M16x1,5, Material: stainless steel 1.4571, clamping range: Ø 4-6,5mm

## 2 Application

The Hygro-Thermo Transmitters of our compact series are designed to measure relative humidity, the temperature of the air and other non-aggressive gases.

The use of capacitive humidity sensors is a guarantee for:

- a high degree of long-term stability
- nearly linear characteristics
- good dynamic behaviour
- dewing stability
- low temperature coefficients
- low hysteresis

The hygro-thermo transmitter is equipped with a protective filter for the sensors, depending on model (see models available).

Type: Membrane-filter with gauze ZE20 (order-no. 1.1005.54.901) for protection against dust in case of field application.

Type: sinter-filter-ZE21 made of stainless steel (order-no. 1.1005.54.902) for protection against dust, sand and high wind velocities (>5 m/s).

### **Remark:**

*For field work, it is advisable to use a „Weather and Thermal Radiation Shield“. It is optionally available as accessory.*

### 3 Mounting

For correct measurements, the Hygro-Thermo Transmitter should be mounted at a site in the room, which is representative of the climate within the room. The mounting position itself is arbitrary. Mount the sensor such that water cannot penetrate the inside of the sensor. Dewing and sprinkling water do not damage the sensor.

Moreover, please make sure to keep the operating voltages as well as a good recirculation ventilation of the instrument. Deviations might lead to measurement errors (for example: due to instrument warming).

Preferably, the sensor should be mounted vertically facing downwards to a wall (indoor application), and should be mounted horizontally facing backwards in canals.

### 4 Maintenance

The Hygro-Thermo Transmitter is supplied already adjusted and its characteristics remain stable for years.

Dust does not damage the humidity sensor but does influence the dynamic behaviour negatively. If the instrument is very dirty, the sensor element can be cleaned or carefully rinsed in distilled water. Make sure you do not touch the highly-sensitive sensor element.

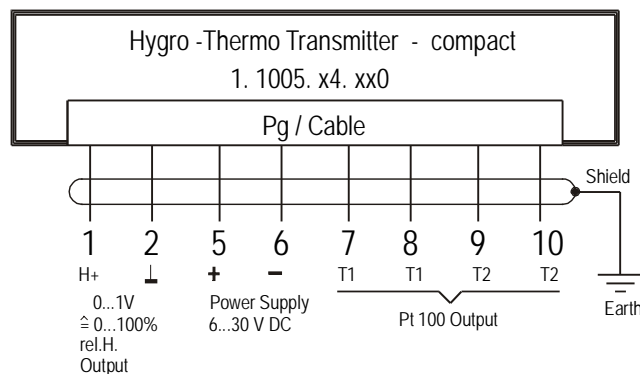
Before cleaning the sensor elements please remove the protecting filter; it should be cleaned, as well or should be replaced.

**Attention:**

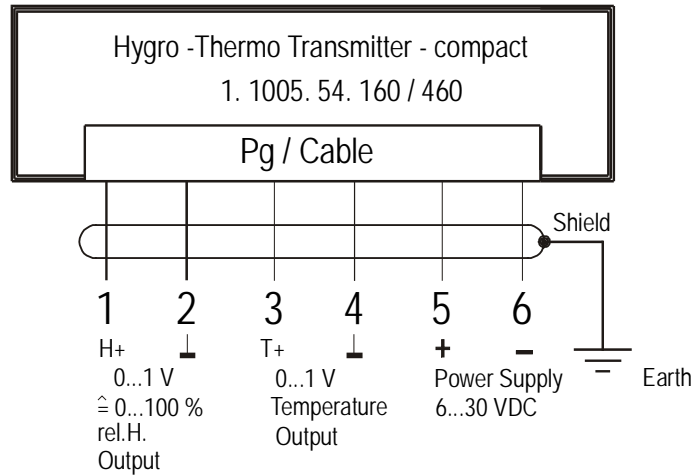
*The instrument housing with the electronics included should be opened only in the factory.*

### 5 Connection Diagrams

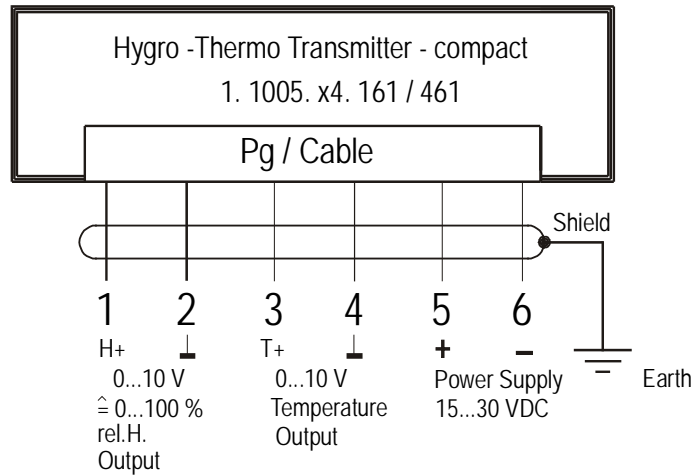
- 1.1005.54.000
- 1.1005.54.150
- 1.1005.54.300
- 1.1005.54.800
- 1.1005.64.000



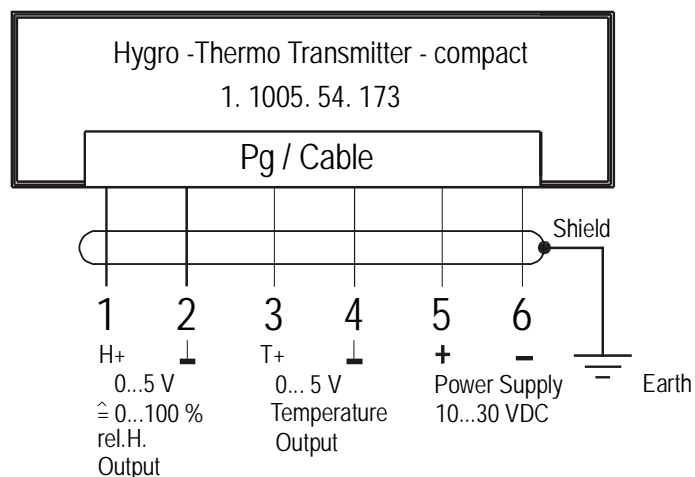
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1.1005.54.460



1.1005.54.161  
1.1005.54.461  
1.1005.64.161



1.1005.54.173  
1.1005.64.173



1.1005.54.241  
 1.1005.54.441  
 1.1005.54.448  
 1.1005.54.941  
 1.1005.64.241

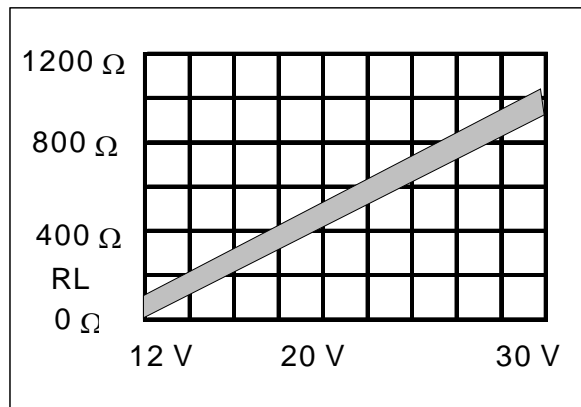
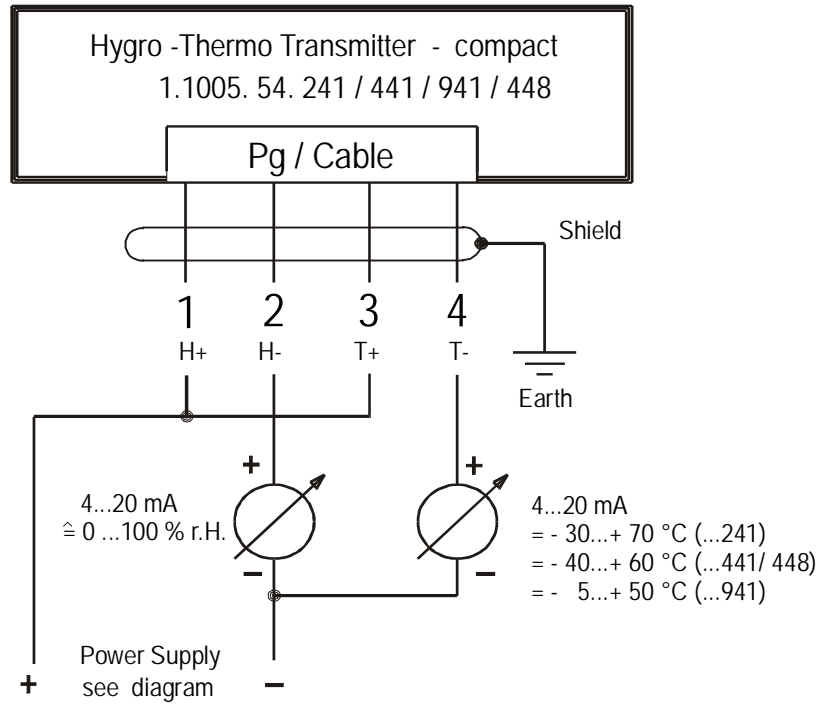
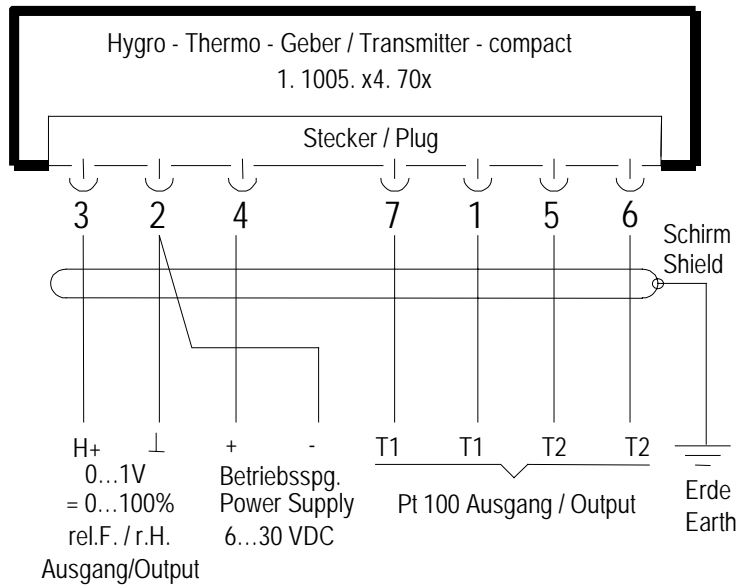


Diagram RL as a function of power supply



<p>1.1005.54.760</p>	<p style="text-align: center;">Hygro - Thermo - Geber / Transmitter - compact 1. 1005. 54. 760</p> <p style="text-align: center;">Stecker / Plug</p> <p style="text-align: center;">3    2    7    5    4    1    6</p> <p style="text-align: center;">Schirm Shield</p> <p style="text-align: center;">Erde Earth</p> <p>H+    0...1V ≅ 0...100% rel.F. / r.H. Ausgang/Output</p> <p>T+    0...1V Temperatur Ausgang/Output</p> <p>+    - Betriebsspg. Power Supply 6...30 VDC</p>	<p>Position of pins</p>
<p>1.1005.54.761 1.1005.54.762</p>	<p style="text-align: center;">Hygro - Thermo - Geber / Transmitter - compact 1. 1005. 54.761 / 762</p> <p style="text-align: center;">Stecker / Plug</p> <p style="text-align: center;">3    2    7    5    4    1    6</p> <p style="text-align: center;">Schirm Shield</p> <p style="text-align: center;">Erde Earth</p> <p>H+    0...10V ≅ 0...100% rel.F. / r.H. Ausgang/Output</p> <p>T+    0...10V Temperatur Ausgang/Output</p> <p>+    - Versorgung Power Supply 15...30 VDC</p>	<p>Position of pins</p>
<p>1.1005.54.773</p>	<p style="text-align: center;">Hygro - Thermo - Geber / Transmitter - compact 1. 1005. 54. 773</p> <p style="text-align: center;">Stecker / Plug</p> <p style="text-align: center;">3    2    7    5    4    1    6</p> <p style="text-align: center;">Schirm Shield</p> <p style="text-align: center;">Erde Earth</p> <p>H+    0...5V ≅ 0...100% rel.F. / r.H. Ausgang/Output</p> <p>T+    0...5V Temperatur Ausgang/Output</p> <p>+    - Betriebsspg. Power Supply 10...30 VDC</p>	<p>Position of pins</p>

1.1005.54.700  
 1.1005.54.701  
 1.1005.64.701



Position of pins

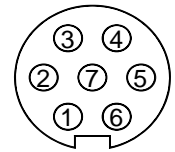
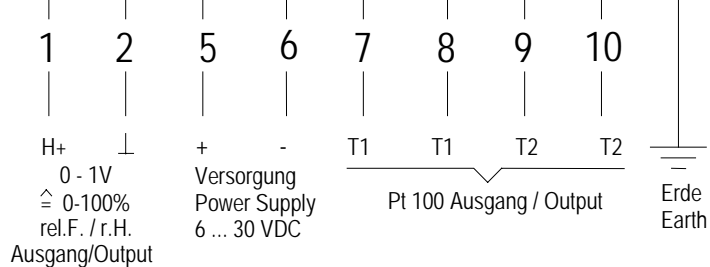
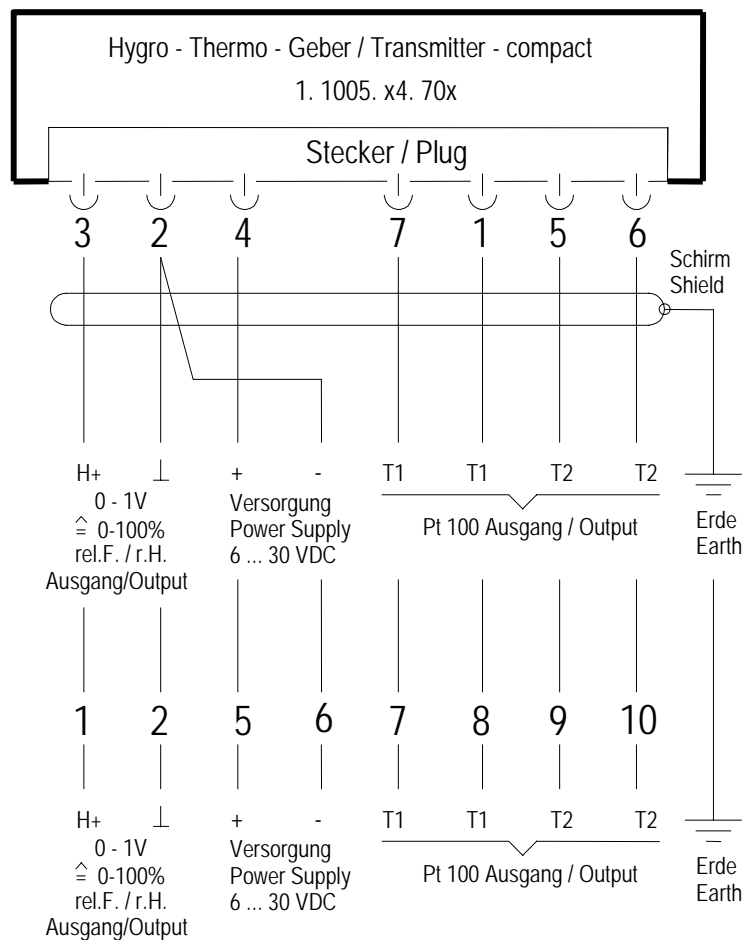


Fig. with additional cable assembly  
 0.1005.54.904



## 6 Technical Data

<b>Humidity</b>	
Measuring element	Capacitive
Measuring range	0...100 % rel. humidity
Deviation	
(mr 5...95% rel.h. at 10...40 °C)	± 2 % rel. humidity
Add. Error (<10°C, >40°C)	< 0,1%/K
Response Time (T 90)	< 20 s (at v = 1.5 m/s) w/o filter
Response Time (T 90)	< 1.5 min. (at v = 1.5 m/s) with Membrane filter ZE 20
Response Time (T 90)	< 1.5 min. (at v = 1.5 m/s) with Sinter filter ZE 21
<b>Temperature</b>	
Measuring element	Pt 100 Class B, 1/3 DIN tolerance
Measuring range	See models available
Deviation	
with output Pt 100, 1/3 DIN	± 0.1 K
with output 0-10 V	± 0.2 K
with output 4-20 mA	± 0.3 K
Add. error (<10°C, >40°C)	± 0.0073 K/K
Response time (T 90)	< 20 s (at v = 1.5 m/s) w/o filter
Response time (T 90)	< 1.5 min. (at v = 1.5 m/s) with Membrane filter ZE 20
Response time (T 90)	< 1.5 min. (at v = 1.5 m/s) with Sinter filter ZE 21
<b>Additional Specifications</b>	
Ambient temperature	-40...+80°C
Degree of protection sensor	IP 30
Degree of protection electronics, connecting head	IP 65
<b>Operating voltage</b>	
I-output	12...30 V DC
U-output (0...10 V)	15...30 V DC
U-output (0...5 V)	10...30 V DC
U-output (0...1 V)	6...30 V DC
<b>Load resistor</b>	
I-output	See diagram RL
U-output (0...10 V / 0...5 V)	≥ 10 kΩ
U-output (0...1 V)	≥ 2 kΩ
<b>Instrument current requirements</b>	
Humidity/Temperature (0..10V / 0..5V)	< 5 mA
Humidity(0...1V)	< 1 mA
<b>Dimension to model 1005.54(64).000 / 150 / 160 / 161 / 173 / 460 /461 / 800</b>	
Diameter	20 mm
Shaft length	122 mm
Total length	145 mm

<b>Dimension to model 1.1005.54(64).241 / 300 / 441 / 448 / 941</b>	
Diameter	20 mm
Shaft length	122 mm
Total length	180 mm
<b>Dimension to model 1.1005.54(64).701 / 760 / 761 / 762 / 773</b>	
Diameter	20 mm
Shaft length	155 mm
Total length	195 mm
<b>Dimension to model 1.1005.54.700</b>	
Diameter	20 mm
Shaft length	155 mm

## 7 Accessories / spare part (optional)

<p><b>Weather and Thermal Radiation Shield</b></p> <p>The use of the Weather and Thermal Radiation Shield in an appropriate combination with suitable temperature and humidity sensors reduces to a minimum the possibility of influencing the data in a negative manner by radiation, precipitation or damage.</p> <p>More exactly measuring results are achieved by using the ventilated Weather and Thermal Radiation Shield (mod. 1.1025.55.10x with ventilation). The ventilation reduces those errors which might occur during the measurements in a weather hut caused by the so-called „proper climate“.</p>	<p>1.1025.55.00x .10x .xx0 .xx1</p>	<p>w/o ventilator with ventilator 12 V DC / 2 W , incl. 5 m cable for mast tube mounting Ø 30 - 50 mm for mast tube mounting Ø 55 – 60 mm</p> <p>dimensions: Ø 120 x 290 mm</p> <p><b>Remark:</b> It is recommendable to use the weather and thermal radiation shield-compact with ventilation order-no. 1.1025.55.10x for Hygro-Thermo Transmitter model ..241 / 441 / 300 / 941 (4-20 mA)</p>
<p><b>Membrane-filter with gauze ZE20</b></p> <p>The filter serves for protecting the sensor elements of the Hygro-thermo transmitter against dust in case of field application.</p>	<p>1.1005.54.901</p>	<p>Material: PTFE / stainless steel Dimensions: Ø 20 x 25 mm</p>
<p><b>Sinter filter ZE21</b></p> <p>The fine-pore sinter filter serves to protect the sensor elements of the Hygro-Thermo-Transmitter <i>compact</i> against high wind speeds (&gt;5m/s) and dust...</p>	<p>1.1005.54.902</p>	<p>Material: stainless steel Dimensions: Ø 20 x 25 mm</p>

## 8 EC-Declaration of Conformity

Document-No.: **000702**

Month: 10 Year: 13

Manufacturer: **ADOLF THIES GmbH & Co. KG**

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email: Info@ThiesClima.com

Description of Product: **Hygro – Thermo Transmitter Compact**

Article No.	<b>1.1005.49.960</b>	<b>1.1005.51.600</b>		
<b>1.1005.54.000</b>	<b>1.1005.54.150</b>	<b>1.1005.54.160</b>	<b>1.1005.54.161</b>	<b>1.1005.54.173</b>
<b>1.1005.54.241</b>	<b>1.1005.54.300</b>	<b>1.1005.54.441</b>	<b>1.1005.54.448</b>	<b>1.1005.54.460</b>
<b>1.1005.54.461</b>	<b>1.1005.54.700</b>	<b>1.1005.54.701</b>	<b>1.1005.54.703</b>	<b>1.1005.54.741</b>
<b>1.1005.54.761</b>	<b>1.1005.54.773</b>	<b>1.1005.54.780</b>	<b>1.1005.54.781</b>	<b>1.1005.54.782</b>
<b>1.1005.54.800</b>	<b>1.1005.54.941</b>	<b>1.1005.54.961</b>	<b>1.1005.64.000</b>	<b>1.1005.64.161</b>
<b>1.1005.64.174</b>	<b>1.1005.64.701</b>	<b>1.1005.64.241</b>		

specified technical data in the document:

**020874/06/13; 021659/04/11; 021660/04/11; 021661/04/11  
021687/01/12; 021691/01/12; 020726/08/13**

The indicated products correspond to the essential requirement of the following European Directives and Regulations:

2004/108/EC	DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
2006/95/EC	DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
552/2004/EC	Regulation (EC) No 552/2004 of the European Parliament and the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation)

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

Reference number	Specification
IEC 61000-6-2: 2005	Electromagnetic compatibility Immunity for industrial environment
IEC 61000-6-3: 2006	Electromagnetic compatibility Emission standard for residential, commercial and light industrial environments
IEC 61010-1: 2010	Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1: General requirements

Place: Göttingen

Date: 17.10.2013

Legally binding signature:

issuer:

.....  
Wolfgang Behrens, General Manager

.....  
Joachim Beinhorn, Development Manager

This declaration certifies the compliance with the mentioned directives, however does not include any warranty of characteristics. Please pay attention to the security advises of the provided instructions for use.



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- Alterations reserved-